Addendum 2021

The Challenges

The competition will challenge the student teams to address the design, integration, and construction issues associated with this project. Please keep in mind that the Challenges presented have been created for the sole purpose of the International Student Design Competition. Submissions should address the following challenges:

1. **BUILDING PERFORMANCE ENHANCEMENT.** Innovatively design an envelope for the George Day School that performs well acoustically, thermally, and allows for daylighting and natural ventilation.
   - Thermal Performance: The student team should focus on how the thermal envelope can be designed to exceed the energy performance of the building by at least 50% over ASHRAE 90.1-2013.
   - Daylight Performance. Design the envelope to use daylight as a primary source of light. Ensuring that 80% of all the area on regularly occupied spaces on floors 1 to 4 have access to adequate daylighting that is controlled for solar glare.
   - Ventilation: Use natural ventilation strategies outlined in ASHRAE 62.1-2013 Natural Ventilation Procedure and demonstrate that every regularly occupied office or classroom space on floors 1-4 has operable windows with access to outdoor air.
   - Acoustical Performance: Ensure that the sound isolation from exterior noise in all acoustically important spaces (offices, classroom/labs, library, music, and performance spaces) is appropriate.

2. **PANDEMIC RESILIENCY.** Given our present situation in a pandemic climate, individuals and companies have realized that much of our infrastructure is not well suited to continue with our pre-established routines. In the education sector, a primary area is having facilities that maximize occupant safety to allow for in-person learning but also the flexibility for hybrid connections with remote individuals. This challenge is now being considered as a significant design consideration that architects and engineers must incorporate into the design of their buildings.

   The Georgetown Day School desires to have a robust building that can provide a healthy educational environment capable of sustaining resident (in-person) education during potential future pandemic scenarios. The School's goal is to continue to teach within the primary building that maximizes the safety of the students, staff, and educators during pandemic situations like COVID-19. Considerations should also be given for hybrid learning where educators can teach in the facility, but students are remote.

   Student teams should research healthy building standards and procedures to protect occupants. From here, design new and/or modify and adjust architectural attributes, as well as engineering systems to maximize the building to function during a pandemic. Innovative

engineering solutions, necessary architectural design changes, and selected materials changes, should be explored, designed, and justified based on applicable codes and new research developments. System considerations can include:

- Air quality and prevention of the spread of air pathogens through natural ventilation and other mechanical system techniques
- The consideration of decontamination/cleaning methods and systems such as light-based, aerosols, etc.
- Features that limit lifespan of pathogens on surfaces and ease of cleaning
- Systems that continue to render education services consistent with the quality of care associated with general day-to-day operations, as much as possible
- Audiovisual, and telecommunication technology platforms to improve hybrid education
- Maximizing space density during pandemic situations that enables continuous operation
- Procedures/processes for facilities maintenance and operations

3. **WATER RETENTION, HARVESTING, & RE-UTILIZATION.** The increase in population on the planet and growth of urban centers around the world has resulted in extremes of either water scarcity or intense rainfall. In some cases, the same location can suffer from both drought and flooding in the same year. Managing and harnessing water resources has now become a significant design problem that architects and engineers must consider in the design of their buildings – from collecting and storing water when it is abundant and available, reducing consumption and waste, reusing water for more than one purpose, and managing water flow when it is overabundant.

   The Georgetown Day School would like to incorporate water harvesting and conservation into the design of their new Lower/Middle School. Their goal is to minimize the use of water supplied by the municipality by reducing their consumption in several areas including using stored rainwater for irrigation of landscaping, green roofs and athletic fields; treating and reusing of grey water for other purposes; and designing efficient plumbing systems that incorporates advanced water saving fixtures.

   Student teams should calculate the quantity of potable water that the school complex would use for domestic functions (restrooms, kitchen, etc.) as well as irrigation if no water harvesting and storage techniques were integrated, then design a holistic and integrated plumbing system that includes the use of captured rainwater, filtered grey water, and potable water to reduce the quantity of water supplied by the municipality.

   Student teams should calculate the amount of runoff from precipitation as well as the water demands for the Georgetown Day School complex and design water collection and storage systems to minimize the demand of municipally supplied water and to minimize storm water runoff to the municipal storm water system from the site. The design could include integrated roof drains, gutters, downspouts, cisterns, swales, filtration, pumps, valves, and other strategies to maximize the harvesting of water resources on the site and minimize runoff.

Building Information

Lower/Middle School, Georgetown Day School, Washington, DC

Georgetown Day School is consolidating the Lower/Middle and High School, currently located on two campuses approximately four miles apart, onto a single campus. The Lower/Middle School project involves constructing a new four-story lower and middle school building. The facility will include a gymnasium, classrooms, teaching pods, a 35,000-SF partially-below-grade parking facility with approximately 283 parking spaces, and a synthetic turf playing field on the roof. The new facility will also contain a 500-seat black box theatre which will include portable stage risers, theatre equipment/rigging/lighting, acoustic wall and ceiling system, and wood flooring.

For the purpose of the AEI International Student Design Competition, the target total building budget will be $64million. Costs associated with the Challenges listed above should be budgeted separately and included as add alternates.

A document with applicable codes will be provided to registered teams with the other project documents.

Competition Timeline

Student Team Registration begins	**Tuesday, August 17, 2020**
Student Team Registration ends	**Wednesday, January 13, 2021 | 1:00pm EST**
Deadline for Written Submissions	**Monday, February 22, 2021 | 1:00pm EST**
Notify Finalist Teams	**Monday, March 8, 2021**
Finalist Presentations	**Thursday, April 8, 2021 (Denver, Colorado)**

All teams may continue to work on their projects after the written submission in anticipation of possible selection as a finalist team and in preparation for the finalist presentations. The architectural engineering programs are encouraged to have competing students present their projects to their peers and faculty. It is also encouraged that they receive comments and suggestions from these individuals at multiple instances throughout the project.